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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,182	11/17/2003	Joseph Andrew Langford	10471-007-999	3372
20583	7590	11/01/2005	EXAMINER	
JONES DAY 222 EAST 41ST ST NEW YORK, NY 10017			THOMAS, LUCY M	
			ART UNIT	PAPER NUMBER
			2836	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/715,182	Applicant(s) LANGFORD ET AL.	
	Examiner Lucy Thomas	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 34-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/17/03, 12/04/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer (US 4,949,214) in view of Niven (US 4,672,175). Regarding Claim 34, Spencer discloses an electric power fault detection and isolation apparatus (Figures 1-5), comprising a control circuit 12 comprising a control relay having main contacts capable of connecting power supply to a load; and a sensor circuit 38 comprising a sensing element detecting one or more voltages across the contacts, and a tripping circuit coupled to the sensing element and control relay wherein the tripping circuit de-energizes the control relay in response to the faults detected by the sensing diode, thereby disconnecting the power supply from the load (Column 5, lines 61-67, Column 6, lines 1-13, 24-44). Spencer fails to disclose a sensing element is a diode detecting one or more voltage drops across the main contacts, each voltage drop corresponding to a transient, arc or ground fault that causes fault current to pass through the main contacts. Niven discloses a sensing diode 25 to detect arc across its terminals (Column 4, lines 3-12). It would have been obvious to one of ordinary skill in art at the time the invention was made to modify Spencer's apparatus to include a sensing diode as taught by Niven to conduct the fault current for a short duration, because the sensing diode

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eliminates the need to calibrate the sensing circuitry components for the load current as it detects fault by the voltage drop across its terminals due to fault current and the resistance (very small) of the relay element. Regarding Claim 35, Spencer and Niven discloses the electric power fault detection and isolation apparatus in the above configuration, wherein the sensor circuit operates independent of the load. Regarding Claim 36, Spencer discloses an electric power fault detection and isolation apparatus further comprising a time delay circuit R2, R3, C (see Figure 5) coupled to the control circuit and sensor circuit, wherein the time delay circuit isolates the sensor circuit from the main contacts during a predetermined time period after the control circuit connects the power supply to the load (Column 7, lines 7-24, Column 8, lines 46-52). Regarding Claim 37, Spencer and Niven disclose an electric power fault detection and isolation apparatus, wherein the tripping circuit further comprises a counting circuit 54 (Spencer, see Figure 3) that counts the number of faults detected by the sensing diode (Niven, 25) circuit and de-energizes the control relay after a predetermined number of faults (Spencer, Column 9, lines 8-49).

3. Claim 38-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer (US 4,949,214) in view of Niven (US 4,672,175) and Beihoff et al. (US 5,185,684). Regarding Claim 38, neither Spencer or and Niven discloses an optocoupler emitter diode and the sensor circuit further comprising an optocoupler detecting diode. Beihoff et al. discloses an electric power fault detection and isolation apparatus (Figure 2), wherein the sensing diode is an optocoupler emitter diode 644 and a sensor circuit, which comprises an optocoupler detecting diode (see collector

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emitter diode of 646 in Figure 9, Column 12, lines 42-53). It would have been obvious to one of ordinary skill in art at the time the invention was made to modify the apparatus of Spencer and Niven with an optocoupler as taught by Beihoff et al., because optocoupler provides added isolation and safety for the apparatus. Regarding Claim 39, Beihoff et al. discloses an electric power fault detection and isolation apparatus, wherein the sensor circuit further comprises an AND gate 742 that receives a signal 652 from the optocoupler detecting diode as an input (Figure 9 and 12). Claim 40 recites the elements of Claim 1 and Claim 2 combined except that the sensing diode is not recited as part of the sensing circuit. Therefore, please see the rejection for Claim 1 above as the above mentioned diode (Niven, 25) may also be considered a sensing circuit. Regarding method claims 41-43, one would necessarily perform the recited method steps in the assembly of the apparatus rejected above. Claim 44 recites the elements of Claim 1, except that the sensing diode is referred only as a means for detecting. Therefore, please see the rejection for Claim 1 and 2 above.

Response to Argument

Applicant states that none of the previously cited references teaches a sensor diode as configured in the amended claims. However, Niven, which is a newly cited reference, discusses a sensor diode as required. Applicant furthermore states that none of the previously cited references discloses a time delay circuit. However, it is noted that a time delay circuit is taught in Spencer, this time delay circuit is RC circuit comprising R2 and C as shown in Figure 2.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy Thomas whose telephone number is 571-272-6002. The examiner can normally be reached on Monday - Friday 8:00 AM - 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT
October 18, 2005



PHUONG T. VU
PRIMARY EXAMINER